

Amendments of the Claims

The following listing of the claims replaces all previous amendments to, and listings of, the claims.

1. (Canceled)

2. (Currently Amended) A sheet feeding apparatus ~~which feeds sheet media in between~~ comprising:

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a feed roller ~~and a reverse roller, that is a roller pressed into contact with said feed roller, is provided by being elastically supported upward by a free end of;~~

a cantilever shaft ~~integrally rotating with a driven gear engaging a drive gear and through a torque limiter, and is;~~

at least one driven gear disposed on the cantilever shaft, the at least one driven gear having a predetermined number of teeth;

at least one driving gear adapted to engage and to drive the at least one driven gear, the at least one driving gear having a predetermined number of teeth that is greater than the predetermined number of teeth of the at least one driven gear; and

a reverse roller pressed into contact with the feed roller, the reverse roller supported on an end of the cantilever shaft and adapted to be rotated in a sheet feeding direction or it's and a reverse direction; and which separates and conveys said and to separate and convey sheet media held between said feed roller and said reverse roller one by one by utilizing differences in friction coefficients between said feed roller, said reverse roller, and said sheet media, said sheet feeding apparatus further comprising

a length variable unit having a variable length, based on such conditions that a position of said engagement part and a rotational direction of said driving gear are determined so that the teeth surfaces of said driven gear undergo an upward force of the

pressurizing force by said driving gear based on said engagement part as an action point of force, and the pressurizing force of said reverse roller against said feed roller is periodically changed by varying said length from a fulcrum, that is a cantilever supporting part of said cantilever shaft, to the action point of the force.

3. (Canceled)

4. (Currently Amended) The A sheet feeding apparatus according to claim 3 which feeds sheet media, comprising

a feed roller;

a reverse roller, which is pressed into contact with said feed roller, is provided by being elastically supported upward by a free end of a cantilever shaft adapted to integrally rotate with a driven gear engaging a driving gear and through a torque limiter, the reverse roller adapted to be rotated in a sheet feeding direction and a reverse direction, and to separate and convey said sheet media held between said feed roller and said reverse roller one by one by utilizing differences in friction coefficients among said feed roller, said reverse roller, and said sheet media; and

a length variable unit having a variable length, based on such conditions that a position of an engagement part and a rotational direction of said driving gear are determined so that teeth surfaces of said driven gear undergo an upward force of a pressurizing force by said driving gear based on said engagement part as an action point of force, and the pressurizing force of said reverse roller against said feed roller is periodically changed by varying said length from a fulcrum, which is a cantilever supporting part of said cantilever shaft, to an action point of the force,

wherein said length variable unit is integrally formed with said driving gear or said driven gear,

said length variable unit comprises a group of driving gears formed with a

plurality of gears arranged at intervals on a driving gear supporting shaft that supports said driving gear, and a group of driven gears formed with a plurality of gears arranged at intervals on a driven gear supporting shaft that supports said driven gear, and

each gear forming either one of these groups of driving gears and driven gears is a teeth-omitted gear that has a teeth-omitted portion, where teeth are omitted on its circumference, and teeth-omitted gears are arranged so that teeth-omitted portions are complemented by each other.

5. (Currently Amended) The sheet feeding apparatus according to claim 4, wherein one gear has a plurality of said teeth-omitted portions.

6. (Original) The sheet feeding apparatus according to claim 4, wherein a tooth Y next to a teeth-omitted portion in one of said teeth-omitted gears and a tooth Z at a position of the nearest phase to said tooth Y of teeth next to teeth-omitted portions in another teeth-omitted gear are simultaneously engaged with respective opposite gears.

7. (Original) The sheet feeding apparatus according to claim 4, wherein a plurality of teeth-omitted gears forming said group of gears are integrally formed.

8.-17. (Canceled)

18. (Currently Amended) An image formation apparatus comprising:
a sheet feeding apparatus which feeds adapted to feed sheet media; and
an image forming unit which forms adapted to form an image on the sheet media feed fed by said sheet feeding apparatus,

wherein said sheet feeding apparatus ~~feeds sheet media in-between~~ comprises:
a feed roller and a reverse roller, that is a roller pressed into contact with said feed roller, is provided by being elastically supported upward by a free end of;
a cantilever shaft integrally rotating with a driven gear engaging a drive gear and through a torque limiter, and is;

at least one driven gear disposed on the cantilever shaft, the at least one driven gear having a predetermined number of teeth;

at least one driving gear adapted to engage and to drive the at least one driven gear, the at least one driving gear having a predetermined number of teeth that is greater than the predetermined number of teeth of the at least one driven gear; and

a reverse roller pressed into contact with the feed roller, the reverse roller supported on an end of the cantilever shaft and adapted to be rotated in a sheet feeding direction or it's and a reverse direction; and which separates and conveys said and to separate and convey sheet media held between said feed roller and said reverse roller one by one by utilizing differences in friction coefficients between said feed roller, said reverse roller, and said sheet media, said sheet feeding apparatus further comprising

a length variable unit having a variable length, based on such conditions that a position of said engagement part and a rotational direction of said driving gear are determined so that the teeth surfaces of said driven gear undergo an upward force of the pressurizing force by said driving gear based on said engagement part as an action point of force, and the pressurizing force of said reverse roller against said feed roller is periodically changed by varying said length from a fulcrum, that is a cantilever supporting part of said cantilever shaft, to the action point of the force.

19. and 20. (Canceled)

21. (Currently Amended) A sheet feeding method comprising the steps of:

feeding sheet media in between a feed roller and a reverse roller, ~~that is a roller~~ pressed into contact with said feed roller, ~~is provided by being elastically supported upward by a free end of a cantilever shaft integrally rotating with a driven gear engaging a drive gear and through a torque limiter, and is~~ the reverse roller adapted to

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~~be rotated in a sheet feeding direction or its reverse direction; and separating and conveying by a driven gear and to separate and convey said sheet media held between said feed roller and said reverse roller one by one by utilizing differences in friction coefficients between said feed roller, said reverse roller, and said sheet media;~~

~~said sheet feeding method using a length variable unit with a motor as a driving power source to vary a length, based on such conditions that a pressurizing force of said reverse roller against said feed roller is periodically changed with no stage or with a plurality of stages;~~

~~a position of said engagement part and a rotational direction of said driving gear are determined so that the teeth surfaces of said driven gear undergo an upward force of the pressurizing force by said driving gear based on said engagement part as an action point, and the pressurizing force is changed by varying said length from a fulcrum, that is a cantilever supporting part of said cantilever shaft, to the action point of the force, and~~

~~said sheet feeding method further comprising the step of controlling operation or non-operation of said length variable unit according to a switching operation; and~~

~~engaging the driven gear with a driving gear, the driving gear having a predetermined number of teeth that is greater than a predetermined number of teeth of the driven gear.~~

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22. (New) The sheet feeding apparatus according to claim 2, wherein the at least one driven gear comprises first and second driven gears, and the at least one driving gear comprises first and second driving gears.

23. (New) The sheet feeding apparatus according to claim 2, wherein the at least one driven gear comprises first and second driven gears, and the at least one driving gear comprises first and second driving gears, the first and second driving gears

adapted to engage and drive the respective first and second driven gears.

24. (New) The sheet feeding apparatus according to claim 23, wherein the first driven gear has a first predetermined number of teeth, and the second driven gear has a second predetermined number of teeth, and at least one of the first and second predetermined number of teeth is less than a predetermined number of teeth of at least one of the first and second driving gears.

25. (New) The sheet feeding apparatus according to claim 23, wherein the first driven gear has a first predetermined number of teeth, and the second driven gear has a second predetermined number of teeth, and each of the first and second predetermined number of teeth is less than a predetermined number of teeth of each of the first and second driving gears.

26. (New) The image formation apparatus according to claim 18, wherein the at least one driven gear comprises first and second driven gears, and the at least one driving gear comprises first and second driving gears.

27. (New) The image formation apparatus according to claim 18, wherein the at least one driven gear comprises first and second driven gears, and the at least one driving gear comprises first and second driving gears, the first and second driving gears adapted to engage and drive the respective first and second driven gears.

28. (New) The image formation apparatus according to claim 27, wherein the first driven gear has a first predetermined number of teeth, and the second driven gear has a second predetermined number of teeth, and at least one of the first and second predetermined number of teeth is less than a predetermined number of teeth of at least one of the first and second driving gears.

29. (New) The image formation apparatus according to claim 27, wherein the first driven gear has a first predetermined number of teeth, and the second driven gear

Q2 has a second predetermined number of teeth, and each the first and second predetermined number of teeth is less than a predetermined number of teeth of each of the first and second driving gears.
